



SEQUENCE LISTING

<110> Bohach, Gregory I.

<120> NON-TOXIC IMMUNE STIMULATING ENTEROTOXIN COMPOSITIONS

<130> 12136.1USWO

<140> US 09/555,115

<141> 2000-08-01

<150> PCT/US98/25107

<151> 1998-12-01

<150> US 60/067,357

<151> 1997-12-02

<160> 66

<170> PatentIn version 3.1

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<211> 240

<212> PRT

<213> Staphylococcus aureus

<220>

<221> MISC_FEATURE

<222> (240)..(240)

<223> Xaa is unknown.

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Phe Thr Gly Leu Met Glu Asn Met Lys Val Leu Tyr Asp Asp His Tyr
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Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val
50 55 60

Lys Thr Glu Leu Leu Asn Glu Gly Leu Ala Lys Lys Tyr Lys Asp Glu
65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser
85 90 95

Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
100 105 110

Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
115 120 125

Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
130 135 140

Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
145 150 155 160

Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
165 170 175

Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
180 185 190

Gly Asn Thr Phe Trp Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
195 200 205

Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
210 215 220

Ser Lys Ser Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
225 230 235 240

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<213> Staphylococcus aureus

<220>
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<223> Xaa is unknown.

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Phe Thr Gly Thr Met Gly Asn Met Lys Tyr Leu Tyr Asp Asp His Tyr
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Val Ser Ala Thr Lys Val Met Ser Val Asp Lys Phe Leu Ala His Asp
35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val

50 55 60
 Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
 65 70 75 80
 Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser
 85 90 95
 Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
 100 105 110
 Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
 115 120 125
 Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
 130 135 140
 Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
 145 150 155 160
 Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
 165 170 175
 Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
 180 185 190
 Gly Asn Thr Phe Gln Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
 195 200 205
 Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
 210 215 220
 Ser Lys Ser Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
 225 230 235 240

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 <223> Xaa is unknown.

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 Phe Thr Gly Thr Met Gly Asn Met Lys Tyr Leu Tyr Asp Asp His Tyr
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 Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
 35 40 45
 Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val
 50 55 60
 Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
 65 70 75 80
 Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser
 85 90 95
 Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
 100 105 110
 Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
 115 120 125
 Gln Asn Val Leu Val Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
 130 135 140
 Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
 145 150 155 160
 Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
 165 170 175
 Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
 180 185 190
 Gly Asn Thr Phe Gln Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
 195 200 205
 Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
 210 215 220
 Ser Lys Ser Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
 225 230 235 240

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Phe Thr Gly Thr Met Gly Asn Met Lys Tyr Leu Tyr Asp Asp His Tyr
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Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
 35 40 45

Leu Ile Tyr Asn Ile Asn Asp Lys Lys Leu Asn Asn Tyr Asp Lys Val
 50 55 60

Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Asn Lys Tyr Lys Asp Glu
 65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser
 85 90 95

Ser Lys Asp Asn Val Gly Lys Val Thr Ser Gly Lys Thr Cys Met Tyr
 100 105 110

Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
 115 120 125

Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
 130 135 140

Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
 145 150 155 160

Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
 165 170 175

Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Ser Asn
 180 185 190

Gly Asn Thr Phe Trp Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
 195 200 205

Asp Gln Ser Lys Tyr Leu Met Ile Tyr Lys Asp Asn Lys Met Val Asp
 210 215 220

Ser Lys Ser Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
 225 230 235 240

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 <223> Xaa is unknown.

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Phe Thr Gly Thr Met Gly Asn Met Lys Tyr Leu Tyr Asp Asp His Tyr
 20 25 30

Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
 35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val
 50 55 60

Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
 65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser
 85 90 95

Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
 100 105 110

Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
 115 120 125

Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
 130 135 140

Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
 145 150 155 160

Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
 165 170 175

Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
 180 185 190

Gly Asn Thr Phe Gln Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
 195 200 205

Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
 210 215 220

Ser Lys Arg Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
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Phe Thr Gly Thr Met Gly Asn Met Lys Tyr Leu Tyr Asp Asp His Tyr
 20 25 30

Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
 35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Arg Leu Lys Asn Tyr Asp Lys Val
 50 55 60

Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
 65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Ser

Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
 35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val
 50 55 60

Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
 65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Tyr Phe Phe
 85 90 95

Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
 100 105 110

Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
 115 120 125

Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
 130 135 140

Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
 145 150 155 160

Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
 165 170 175

Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
 180 185 190

Gly Asn Thr Phe Gln Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
 195 200 205

Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
 210 215 220

Ser Lys Arg Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
 225 230 235 240

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<223> Xaa is unknown.

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Phe Thr Gly Leu Met Glu Asn Met Lys Val Leu Tyr Asp Asp Arg Tyr
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Val Ser Ala Thr Lys Val Lys Ser Val Asp Lys Phe Leu Ala His Asp
35 40 45

Leu Ile Tyr Asn Ile Ser Asp Lys Lys Leu Lys Asn Tyr Asp Lys Val
50 55 60

Lys Thr Glu Leu Leu Asn Glu Asp Leu Ala Lys Lys Tyr Lys Asp Glu
65 70 75 80

Val Val Asp Val Tyr Gly Ser Asn Tyr Tyr Val Asn Cys Cys Phe Phe
85 90 95

Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys Thr Cys Met Tyr
100 105 110

Gly Gly Ile Thr Lys His Glu Gly Asn His Phe Asp Asn Gly Asn Leu
115 120 125

Gln Asn Val Leu Ile Arg Val Tyr Glu Asn Lys Arg Asn Thr Ile Ser
130 135 140

Phe Glu Val Gln Thr Asp Lys Lys Ser Val Thr Ala Gln Glu Leu Asp
145 150 155 160

Ile Lys Ala Arg Asn Phe Leu Ile Asn Lys Lys Asn Leu Tyr Glu Phe
165 170 175

Asn Ser Ser Pro Tyr Glu Thr Gly Tyr Ile Lys Phe Ile Glu Asn Asn
180 185 190

Gly Asn Thr Phe Gln Tyr Asp Met Met Pro Ala Pro Gly Asp Lys Phe
195 200 205

Asp Gln Ser Lys Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp
210 215 220

Ser Lys Arg Val Lys Ile Glu Val His Leu Thr Thr Lys Asn Gly Xaa
 225 230 235 240

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 <213> Staphylococcus aureus

<400> 9

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<210> 10
 <211> 21
 <212> PRT
 <213> Staphylococcus aureus

<400> 10

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 1 5 10 15

Lys Arg Lys Thr Cys
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<400> 11

Cys Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
 1 5 10 15

Thr Cys

<210> 12
 <211> 18
 <212> PRT
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<400> 12

Cys Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
 1 5 10 15

Thr Cys

<210> 13
<211> 18
<212> PRT
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<400> 13

Cys Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
1 5 10 15

Thr Cys

<210> 14
<211> 18
<212> PRT
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<400> 14

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1 5 10 15

Thr Cys

<210> 15
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<400> 15

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1 5 10 15

Thr Cys

<210> 16
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<400> 16

Cys Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
1 5 10 15

Thr Cys

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<400> 17

Cys Cys Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
1 5 10 15

Thr Cys

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1 5 10

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<400> 19

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1 5 10

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Lys Tyr Lys Asp Glu Val Val Asp Val Tyr Gly
1 5 10

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1 5 10

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 1 5 10

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 <400> 23

 His Phe Lys Ser Lys Asn Val Asp Val Tyr Pro
 1 5 10

 <210> 24
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 <212> PRT
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 <400> 24

 Lys Tyr Lys Gly Lys Lys Val Asp Leu Tyr Gly
 1 5 10

 <210> 25
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 <400> 25

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 1 5 10

 <210> 26
 <211> 11
 <212> PRT
 <213> Streptococcus pyrogenes

 <400> 26

 Phe Lys Arg Asp Asp His Val Asp Val Phe Gly
 1 5 10

 <210> 27
 <211> 11
 <212> PRT
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<400> 27

Phe Thr Lys Gly Glu Lys Val Asp Leu Asn Thr
1 5 10

<210> 28

<211> 17

<212> PRT

<213> Staphylococcus aureus

<400> 28

Lys Lys Asn Val Thr Val Gln Glu Leu Asp Leu Gln Ala Arg Arg Tyr
1 5 10 15

Leu

<210> 29

<211> 17

<212> PRT

<213> Staphylococcus aureus

<400> 29

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Leu

<210> 30

<211> 17

<212> PRT

<213> Staphylococcus aureus

<400> 30

Lys Lys Ser Val Thr Ala Gln Glu Leu Asp Ile Lys Ala Arg Asn Phe
1 5 10 15

Leu

<210> 31

<211> 17

<212> PRT

<213> Staphylococcus aureus

<400> 31

Lys Lys Ser Val Thr Ala Gln Glu Leu Asp Ile Lys Ala Arg Asn Phe
1 5 10 15

Leu

<210> 32
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<213> Staphylococcus aureus

<400> 32

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1 5 10 15

Leu

<210> 33
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1 5 10 15

Leu

<210> 34
<211> 17
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<400> 34

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1 5 10 15

Leu

<210> 35
<211> 17
<212> PRT
<213> Streptococcus pyrogenes

<400> 35

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1 5 10 15

Leu

<210> 36
<211> 17
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<213> Streptococcus pyrogenes

<400> 36

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1 5 10 15

Leu

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<210> 38
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<213> Staphylococcus aureus

<400> 38

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1 5

<210> 39
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<213> Staphylococcus aureus

<400> 39

Cys Met Tyr Gly Gly Val Ile Leu His Asp Asn Asn
1 5 10

<210> 40
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<400> 40

Cys Met Tyr Gly Gly Val Thr Glu His Asn Gly Asn
1 5 10

<210> 41
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<212> PRT
<213> Staphylococcus aureus

<400> 41

Cys Met Tyr Gly Gly Ile Thr Lys His Glu Gly Asn
1 5 10

<210> 42
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<400> 42

Cys Met Tyr Gly Gly Ile Thr Lys His Glu Gly Asn
1 5 10

<210> 43
<211> 12
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<213> Staphylococcus aureus

<400> 43

Cys Met Tyr Gly Gly Ile Thr Lys His Glu Gly Asn
1 5 10

<210> 44
<211> 12
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<400> 44

Cys Thr Tyr Gly Gly Val Thr Pro His Glu Gly Asn
1 5 10

<210> 45
<211> 12
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<400> 45

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1 5 10

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<400> 46

Cys Ile Tyr Gly Gly Val Thr Asn His Glu Gly Asn
1 5 10

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<211> 12
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<400> 47

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1 5 10

<210> 48
<211> 12
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<400> 48

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1 5 10

<210> 49
<211> 14
<212> PRT
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<400> 49

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1 5 10

<210> 50
<211> 14
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<400> 50

Tyr Leu Met Met Tyr Asn Asp Asn Lys Met Val Asp Ser Lys
1 5 10

<210> 51
<211> 14
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<400> 51

Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp Ser Lys
1 5 10

<210> 52

<211> 14

<212> PRT

<213> Staphylococcus aureus

<400> 52

Tyr Leu Met Met Tyr Asn Asp Asn Lys Thr Val Asp Ser Lys
1 5 10

<210> 53

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<213> Staphylococcus aureus

<400> 53

Tyr Leu Met Ile Tyr Lys Asp Asn Lys Met Val Asp Ser Lys
1 5 10

<210> 54

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<400> 54

Gln Leu Arg Ile Tyr Ser Asp Asn Lys Thr Leu Ser Thr Glu
1 5 10

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<211> 14

<212> PRT

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1 5 10

<210> 56

<211> 14

<212> PRT

<213> Streptococcus pyrogenes

<400> 56

Tyr Leu Met Ile Tyr Lys Asp Met Glu Thr Leu Asp Ser Asn
1 5 10

<210> 57
<211> 14
<212> PRT
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<400> 57

Ile Phe Ala Lys Tyr Lys Asp Asn Arg Ile Ile Asn Met Lys
1 5 10

<210> 58
<211> 14
<212> PRT
<213> Staphylococcus aureus

<400> 58

Pro Pro Ile Asn Ile Asp Glu Ile Lys Thr Ile Glu Ala Glu
1 5 10

<210> 59
<211> 54
<212> DNA
<213> Staphylococcus aureus

<400> 59
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<210> 60
<211> 18
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<213> Staphylococcus aureus

<400> 60

Cys Tyr Phe Ser Ser Lys Asp Asn Val Gly Lys Val Thr Gly Gly Lys
1 5 10 15

Thr Cys

<210> 61
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic

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<210> 62

<211> 14
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<400> 62

Cys Tyr Phe Ser Ser Lys Asp Asn Ala Gly Gly Lys Thr Cys
1 5 10

<210> 63
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<220>
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<400> 63
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27

<210> 64
<211> 9
<212> PRT
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<220>
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<400> 64

Cys Tyr Phe Ser Ser Gly Lys Thr Cys
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<223> Synthetic

<400> 65
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18

<210> 66
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic

<400> 66

Cys Cys Gly Lys Thr Cys
1 5